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Application No. 09/842,370
Filed: April 25, 2001
TC Art Unit: 2162
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AMENDMENTS TO THE CLAIMS

1-3. (canceled)

4. (currently amended) An apparatus including at least one processor and at least one memory, the processor being operative to execute at least one program out of the memory for managing data corresponding to a plurality of reticles in a semiconductor manufacturing system, comprising:

a central reticle database configured and arranged to store data associated with the plurality of reticles;

a reticle management controller communicably coupled to the central reticle database, the reticle management controller configured and arranged to store data in the central reticle database, and to retrieve data from the central reticle database;
and

at least one stocker including a stocker database, a stocker controller communicably coupled to the stocker database and communicably coupled to the reticle management controller, and a plurality of storage locations configured and arranged to store the plurality of reticles, the stocker controller being configured and arranged to store data corresponding to the plurality of

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reticles stored within the plurality of storage locations within the stocker database,

wherein the data associated with the plurality of reticles stored in the central reticle database includes first and second data, each of the first and second data including a plurality of data portions, each portion of the first data being associated with a respective reticle stored in the at least one stocker, and each portion of the second data corresponding to at least one predetermined data constant associated with the plurality of reticles stored in the at least one stocker, wherein the reticle management controller is configured and arranged to retrieve at least a portion of the data corresponding to the plurality of reticles stored within the stocker database, and to store the retrieved data portion within the central reticle database,

wherein the reticle management controller is further configured and arranged to manipulate and to maintain the plurality of reticles based on one or more portions of the first data associated with the respective reticles stored in the at least one stocker, and one or more portions of the second data corresponding to the predetermined data constants associated with the plurality of reticles stored in the at least one stocker,

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wherein the portions of the first data corresponding to each of the plurality of reticles stored in the central reticle database includes a plurality of reticle identifying data,

wherein the plurality of reticle identifying data includes an attribute identifying the reticle, and an attribute identifying the location of the reticle, and

~~The apparatus of claim 3~~ wherein the plurality of reticle identifying data further includes:

an attribute identifying a reticle carrier housing the reticle;

an attribute identifying a the date and time the reticle was entered into use; and

an attribute identifying a user identifier who created the reticle.

5. (currently amended) The apparatus of claim ~~1~~4 wherein the portions of the first data corresponding to each of the plurality of reticles stored in the central reticle database includes a plurality of reticle history data.

6. (currently amended) An apparatus including at least one processor and at least one memory, the processor being operative

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to execute at least one program out of the memory for managing data corresponding to a plurality of reticles in a semiconductor manufacturing system, comprising:

a central reticle database configured and arranged to store data associated with the plurality of reticles;

a reticle management controller communicably coupled to the central reticle database, the reticle management controller configured and arranged to store data in the central reticle database, and to retrieve data from the central reticle database;
and

at least one stocker including a stocker database, a stocker controller communicably coupled to the stocker database and communicably coupled to the reticle management controller, and a plurality of storage locations configured and arranged to store the plurality of reticles, the stocker controller being configured and arranged to store data corresponding to the plurality of reticles stored within the plurality of storage locations within the stocker database,

wherein the data associated with the plurality of reticles stored in the central reticle database includes first and second data, each of the first and second data including a plurality of data portions, each portion of the first data being associated

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with a respective reticle stored in the at least one stocker, and
each portion of the second data corresponding to at least one
predetermined data constant associated with the plurality of
reticles stored in the at least one stocker, wherein the reticle
management controller is configured and arranged to retrieve at
least a portion of the data corresponding to the plurality of
reticles stored within the stocker database, and to store the
retrieved data portion within the central reticle database,

wherein the reticle management controller is further
configured and arranged to manipulate and to maintain the
plurality of reticles based on one or more portions of the first
data associated with the respective reticles stored in the at
least one stocker, and one or more portions of the second data
corresponding to the predetermined data constants associated with
the plurality of reticles stored in the at least one stocker, and

The apparatus of claim 1 wherein the portions of the first
data corresponding to each of the plurality of reticles stored in
the central reticle database includes a plurality of reticle
history data including:

an attribute identifying the number of times the reticle has
been retrieved;

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an attribute identifying the date the reticle was last retrieved;

an attribute identifying the number of times the reticle has been stored; and

an attribute identifying the date the reticle was last stored.

7. (currently amended) An apparatus including at least one processor and at least one memory, the processor being operative to execute at least one program out of the memory for managing data corresponding to a plurality of reticles in a semiconductor manufacturing system, comprising:

a central reticle database configured and arranged to store data associated with the plurality of reticles;

a reticle management controller communicably coupled to the central reticle database, the reticle management controller configured and arranged to store data in the central reticle database, and to retrieve data from the central reticle database;
and

at least one stocker including a stocker database, a stocker controller communicably coupled to the stocker database and communicably coupled to the reticle management controller, and a

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plurality of storage locations configured and arranged to store the plurality of reticles, the stocker controller being configured and arranged to store data corresponding to the plurality of reticles stored within the plurality of storage locations within the stocker database,

wherein the data associated with the plurality of reticles stored in the central reticle database includes first and second data, each of the first and second data including a plurality of data portions, each portion of the first data being associated with a respective reticle stored in the at least one stocker, and each portion of the second data corresponding to at least one predetermined data constant associated with the plurality of reticles stored in the at least one stocker, wherein the reticle management controller is configured and arranged to retrieve at least a portion of the data corresponding to the plurality of reticles stored within the stocker database, and to store the retrieved data portion within the central reticle database,

wherein the reticle management controller is further configured and arranged to manipulate and to maintain the plurality of reticles based on one or more portions of the first data associated with the respective reticles stored in the at least one stocker, and one or more portions of the second data

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corresponding to the predetermined data constants associated with the plurality of reticles stored in the at least one stocker, and

The apparatus of claim 1 wherein the portions of the first data corresponding to each of the plurality of reticles stored in the central reticle database includes a plurality of reticle history data including:

an attribute identifying a user identifier who last selected the reticle; and

an attribute identifying a user identifier who last stored the reticle.

8. (currently amended) The apparatus of claim 1-7 wherein the portions of the first data corresponding to each of the plurality of reticles stored in the central reticle database includes a plurality of reticle maintenance data.

9. (currently amended) An apparatus including at least one processor and at least one memory, the processor being operative to execute at least one program out of the memory for managing data corresponding to a plurality of reticles in a semiconductor manufacturing system, comprising:

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a central reticle database configured and arranged to store data associated with the plurality of reticles;

a reticle management controller communicably coupled to the central reticle database, the reticle management controller configured and arranged to store data in the central reticle database, and to retrieve data from the central reticle database;
and

at least one stocker including a stocker database, a stocker controller communicably coupled to the stocker database and communicably coupled to the reticle management controller, and a plurality of storage locations configured and arranged to store the plurality of reticles, the stocker controller being configured and arranged to store data corresponding to the plurality of reticles stored within the plurality of storage locations within the stocker database,

wherein the data associated with the plurality of reticles stored in the central reticle database includes first and second data, each of the first and second data including a plurality of data portions, each portion of the first data being associated with a respective reticle stored in the at least one stocker, and each portion of the second data corresponding to at least one predetermined data constant associated with the plurality of

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reticles stored in the at least one stocker, wherein the reticle management controller is configured and arranged to retrieve at least a portion of the data corresponding to the plurality of reticles stored within the stocker database, and to store the retrieved data portion within the central reticle database,

wherein the reticle management controller is further configured and arranged to manipulate and to maintain the plurality of reticles based on one or more portions of the first data associated with the respective reticles stored in the at least one stocker, and one or more portions of the second data corresponding to the predetermined data constants associated with the plurality of reticles stored in the at least one stocker,

wherein the portions of the first data corresponding to each of the plurality of reticles stored in the central reticle database includes a plurality of reticle maintenance data, and

~~The apparatus of claim 8~~ wherein the portions of the first data corresponding to each of the plurality of reticles stored in the central reticle database includes the plurality of reticle maintenance data including:

an attribute identifying the number of times the reticle has been cleaned;

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an attribute identifying the date on which the reticle was last cleaned;

an attribute identifying the number of times the reticle was inspected; and

an attribute identifying the date on which the reticle was last inspected.

10. (original) The apparatus of claim 9 wherein the plurality of reticle maintenance data further includes:

an attribute identifying a user identifier who last cleaned the reticle;

an attribute identifying a location where the reticle was last cleaned;

an attribute identifying a user identifier who last inspected the reticle; and

an attribute identifying a location where the reticle was last inspected.

11. (currently amended) The apparatus of claim ~~1~~9 further including:

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a central system database configured and arranged to store portions of the second data corresponding to system requirements of the plurality of reticles,

wherein the reticle management controller is communicably coupled to the central system database, the reticle management controller being configured and arranged to store and to retrieve the system data from the central system database.

12. (currently amended) An apparatus including at least one processor and at least one memory, the processor being operative to execute at least one program out of the memory for managing data corresponding to a plurality of reticles in a semiconductor manufacturing system, comprising:

a central reticle database configured and arranged to store data associated with the plurality of reticles;

a reticle management controller communicably coupled to the central reticle database, the reticle management controller configured and arranged to store data in the central reticle database, and to retrieve data from the central reticle database;
and

at least one stocker including a stocker database, a stocker controller communicably coupled to the stocker database and

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communicably coupled to the reticle management controller, and a plurality of storage locations configured and arranged to store the plurality of reticles, the stocker controller being configured and arranged to store data corresponding to the plurality of reticles stored within the plurality of storage locations within the stocker database,

wherein the data associated with the plurality of reticles stored in the central reticle database includes first and second data, each of the first and second data including a plurality of data portions, each portion of the first data being associated with a respective reticle stored in the at least one stocker, and each portion of the second data corresponding to at least one predetermined data constant associated with the plurality of reticles stored in the at least one stocker, wherein the reticle management controller is configured and arranged to retrieve at least a portion of the data corresponding to the plurality of reticles stored within the stocker database, and to store the retrieved data portion within the central reticle database,

wherein the reticle management controller is further configured and arranged to manipulate and to maintain the plurality of reticles based on one or more portions of the first data associated with the respective reticles stored in the at

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least one stocker, and one or more portions of the second data corresponding to the predetermined data constants associated with the plurality of reticles stored in the at least one stocker,

further including:

a central system database configured and arranged to store portions of the second data corresponding to system requirements of the plurality of reticles,

wherein the reticle management controller is communicably coupled to the central system database, the reticle management controller being configured and arranged to store and to retrieve the system data from the central system database, and

The apparatus of claim 11 wherein the portions of the second data corresponding to the system requirements of the plurality of reticles includes:

an attribute identifying the maximum number of cleanings of a reticle;

an attribute identifying the maximum number of inspections of a reticle;

an attribute identifying the maximum number of uses of a reticle between inspections; and

an attribute identifying the maximum number of uses of a reticle between cleaning.

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13. (currently amended) An apparatus including at least one processor and at least one memory, the processor being operative to execute at least one program out of the memory for managing data corresponding to a plurality of reticles in a semiconductor manufacturing system, comprising:

a central reticle database configured and arranged to store data associated with the plurality of reticles;

a reticle management controller communicably coupled to the central reticle database, the reticle management controller configured and arranged to store data in the central reticle database, and to retrieve data from the central reticle database;
and

at least one stocker including a stocker database, a stocker controller communicably coupled to the stocker database and communicably coupled to the reticle management controller, and a plurality of storage locations configured and arranged to store the plurality of reticles, the stocker controller being configured and arranged to store data corresponding to the plurality of reticles stored within the plurality of storage locations within the stocker database,

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wherein the data associated with the plurality of reticles stored in the central reticle database includes first and second data, each of the first and second data including a plurality of data portions, each portion of the first data being associated with a respective reticle stored in the at least one stocker, and each portion of the second data corresponding to at least one predetermined data constant associated with the plurality of reticles stored in the at least one stocker, wherein the reticle management controller is configured and arranged to retrieve at least a portion of the data corresponding to the plurality of reticles stored within the stocker database, and to store the retrieved data portion within the central reticle database,

wherein the reticle management controller is further configured and arranged to manipulate and to maintain the plurality of reticles based on one or more portions of the first data associated with the respective reticles stored in the at least one stocker, and one or more portions of the second data corresponding to the predetermined data constants associated with the plurality of reticles stored in the at least one stocker,

further including:

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a central system database configured and arranged to store portions of the second data corresponding to system requirements of the plurality of reticles,

wherein the reticle management controller is communicably coupled to the central system database, the reticle management controller being configured and arranged to store and to retrieve the system data from the central system database, and

~~The apparatus of claim 11~~ wherein the portions of the second data corresponding to the system requirements of the plurality of reticles includes:

an attribute identifying the maximum time between inspections of a bare reticle; and

an attribute identifying the maximum time between cleanings of a bare reticle.

14. (currently amended) An apparatus including at least one processor and at least one memory, the processor being operative to execute at least one program out of the memory for managing data corresponding to a plurality of reticles in a semiconductor manufacturing system, comprising:

a central reticle database configured and arranged to store data associated with the plurality of reticles;

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a reticle management controller communicably coupled to the central reticle database, the reticle management controller configured and arranged to store data in the central reticle database, and to retrieve data from the central reticle database; and

at least one stocker including a stocker database, a stocker controller communicably coupled to the stocker database and communicably coupled to the reticle management controller, and a plurality of storage locations configured and arranged to store the plurality of reticles, the stocker controller being configured and arranged to store data corresponding to the plurality of reticles stored within the plurality of storage locations within the stocker database,

wherein the data associated with the plurality of reticles stored in the central reticle database includes first and second data, each of the first and second data including a plurality of data portions, each portion of the first data being associated with a respective reticle stored in the at least one stocker, and each portion of the second data corresponding to at least one predetermined data constant associated with the plurality of reticles stored in the at least one stocker, wherein the reticle management controller is configured and arranged to retrieve at

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least a portion of the data corresponding to the plurality of
reticles stored within the stocker database, and to store the
retrieved data portion within the central reticle database,

wherein the reticle management controller is further
configured and arranged to manipulate and to maintain the
plurality of reticles based on one or more portions of the first
data associated with the respective reticles stored in the at
least one stocker, and one or more portions of the second data
corresponding to the predetermined data constants associated with
the plurality of reticles stored in the at least one stocker,

further including:

a central system database configured and arranged to store
portions of the second data corresponding to system requirements
of the plurality of reticles,

wherein the reticle management controller is communicably
coupled to the central system database, the reticle management
controller being configured and arranged to store and to retrieve
the system data from the central system database, and

The apparatus of claim 11 wherein the portions of the second
data corresponding to the system requirements of the plurality of
reticles includes:

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an attribute identifying the maximum time between inspections of a kitted reticle; and

an attribute identifying the maximum time between cleanings of a kitted reticle.

15. (currently amended) The apparatus of claim ~~1~~14 further including a plurality of stockers, each of the plurality of stockers including a stocker controller communicably coupled to the reticle management controller, a stocker database, and a plurality of storage locations configured and arranged to store at least one of the plurality of reticles, the stocker controller configured and arranged to collect at least a portion of the first and second data, and to store the at least a portion of the first and second data within the stocker database,

wherein the reticle management controller is configured and arranged to receive at least a portion of the first and second data from each of the plurality of stocker controllers, and to provide at least a portion of the first and second data to each of the plurality of stocker controllers.

16-22. (canceled)

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23. (currently amended) An apparatus including at least one processor and at least one memory, the processor being operative to execute at least one program out of the memory for managing data corresponding to a plurality of reticles in a semiconductor manufacturing system, comprising:

a central reticle database configured and arranged to store data associated with the plurality of reticles; and

a reticle management controller communicably coupled to the central reticle database, the reticle management controller configured and arranged to store data in the central reticle database, and to retrieve data from the central reticle database,

wherein the data associated with the plurality of reticles includes first and second data, each of the first and second data including a plurality of data portions, each portion of the first data being associated with a respective reticle, and each portion of the second data corresponding to at least one predetermined data constant associated with the plurality of reticles,

wherein the portions of the first data associated with the respective ones of the plurality of reticles includes a plurality of reticle identifying data,

wherein the plurality of reticle identifying data includes:

an attribute identifying the reticle; and

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an attribute identifying the location of the reticle, and

~~The apparatus of claim 22~~ wherein the plurality of reticle
identifying data further includes:

an attribute identifying a reticle carrier housing the
reticle;

an attribute identifying a the date and time the reticle was
entered into use; and

an attribute identifying a user identifier who created the
reticle.

24. (currently amended) The apparatus of claim ~~20-23~~ wherein the
portions of the first data associated with the respective ones of
the plurality of reticles includes a plurality of reticle history
data.

25. (currently amended) An apparatus including at least one
processor and at least one memory, the processor being operative
to execute at least one program out of the memory for managing
data corresponding to a plurality of reticles in a semiconductor
manufacturing system, comprising:

a central reticle database configured and arranged to store
data associated with the plurality of reticles; and

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a reticle management controller communicably coupled to the central reticle database, the reticle management controller configured and arranged to store data in the central reticle database, and to retrieve data from the central reticle database, wherein the data associated with the plurality of reticles includes first and second data, each of the first and second data including a plurality of data portions, each portion of the first data being associated with a respective reticle, and each portion of the second data corresponding to at least one predetermined data constant associated with the plurality of reticles, and

~~The apparatus of claim 20~~ wherein the portions of the first data associated with the respective ones of the plurality of reticles includes a plurality of reticle history data including:

an attribute identifying the number of times the reticle has been retrieved;

an attribute identifying the date the reticle was last retrieved;

an attribute identifying the number of times the reticle has been stored; and

an attribute identifying the date the reticle was last stored.

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26. (currently amended) An apparatus including at least one processor and at least one memory, the processor being operative to execute at least one program out of the memory for managing data corresponding to a plurality of reticles in a semiconductor manufacturing system, comprising:

a central reticle database configured and arranged to store data associated with the plurality of reticles; and

a reticle management controller communicably coupled to the central reticle database, the reticle management controller configured and arranged to store data in the central reticle database, and to retrieve data from the central reticle database,

wherein the data associated with the plurality of reticles includes first and second data, each of the first and second data including a plurality of data portions, each portion of the first data being associated with a respective reticle, and each portion of the second data corresponding to at least one predetermined data constant associated with the plurality of reticles, and

The apparatus of claim 20 wherein the portions of the first data associated with the respective ones of the plurality of reticles includes a plurality of reticle history data including:

an attribute identifying a user identifier who last selected the reticle; and

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an attribute identifying a user identifier who last stored the reticle.

27. (currently amended) The apparatus of claim ~~20~~ 26 wherein the portions of the first data associated with the respective ones of the plurality of reticles includes a plurality of reticle maintenance data.

28. (currently amended) An apparatus including at least one processor and at least one memory, the processor being operative to execute at least one program out of the memory for managing data corresponding to a plurality of reticles in a semiconductor manufacturing system, comprising:

a central reticle database configured and arranged to store data associated with the plurality of reticles; and

a reticle management controller communicably coupled to the central reticle database, the reticle management controller configured and arranged to store data in the central reticle database, and to retrieve data from the central reticle database,

wherein the data associated with the plurality of reticles includes first and second data, each of the first and second data including a plurality of data portions, each portion of the first

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data being associated with a respective reticle, and each portion
of the second data corresponding to at least one predetermined
data constant associated with the plurality of reticles,

wherein the portions of the first data associated with the
respective ones of the plurality of reticles includes a plurality
of reticle maintenance data, and

The apparatus of claim 27 wherein the plurality of reticle
maintenance data includes:

an attribute identifying the number of times the reticle has
been cleaned;

an attribute identifying the date on which the reticle was
last cleaned;

an attribute identifying the number of times the reticle was
inspected; and

an attribute identifying the date on which the reticle was
last inspected.

29. (original) The apparatus of claim 28 wherein the plurality of
reticle maintenance data further includes:

an attribute identifying a user identifier who last cleaned
the reticle;

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an attribute identifying a location where the reticle was last cleaned;

an attribute identifying a user identifier who last inspected the reticle; and

an attribute identifying a location where the reticle was last inspected.

30. (currently amended) The apparatus of claim ~~20~~28 further including:

a central system database configured and arranged to store portions of the second data corresponding to system requirements of the plurality of reticles,

wherein the reticle management controller is communicably coupled to the central system database, the reticle management controller being configured and arranged to store and to retrieve the system data from the central system database.

31. (currently amended) An apparatus including at least one processor and at least one memory, the processor being operative to execute at least one program out of the memory for managing data corresponding to a plurality of reticles in a semiconductor manufacturing system, comprising:

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a central reticle database configured and arranged to store data associated with the plurality of reticles; and

a reticle management controller communicably coupled to the central reticle database, the reticle management controller configured and arranged to store data in the central reticle database, and to retrieve data from the central reticle database,

wherein the data associated with the plurality of reticles includes first and second data, each of the first and second data including a plurality of data portions, each portion of the first data being associated with a respective reticle, and each portion of the second data corresponding to at least one predetermined data constant associated with the plurality of reticles,

further including:

a central system database configured and arranged to store portions of the second data corresponding to system requirements of the plurality of reticles,

wherein the reticle management controller is communicably coupled to the central system database, the reticle management controller being configured and arranged to store and to retrieve the system data from the central system database, and

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~~The apparatus of claim 30~~ wherein the portions of the second data corresponding to the system requirements of the plurality of reticles includes:

an attribute identifying the maximum number of cleanings of a reticle;

an attribute identifying the maximum number of inspections of a reticle;

an attribute identifying the maximum number of uses of a reticle between inspections; and

an attribute identifying the maximum number of uses of a reticle between cleaning.

32. (currently amended) An apparatus including at least one processor and at least one memory, the processor being operative to execute at least one program out of the memory for managing data corresponding to a plurality of reticles in a semiconductor manufacturing system, comprising:

a central reticle database configured and arranged to store data associated with the plurality of reticles; and

a reticle management controller communicably coupled to the central reticle database, the reticle management controller

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configured and arranged to store data in the central reticle database, and to retrieve data from the central reticle database,

wherein the data associated with the plurality of reticles includes first and second data, each of the first and second data including a plurality of data portions, each portion of the first data being associated with a respective reticle, and each portion of the second data corresponding to at least one predetermined data constant associated with the plurality of reticles,

further including:

a central system database configured and arranged to store portions of the second data corresponding to system requirements of the plurality of reticles,

wherein the reticle management controller is communicably coupled to the central system database, the reticle management controller being configured and arranged to store and to retrieve the system data from the central system database, and

~~The apparatus of claim 30~~ wherein the portions of the second data corresponding to the system requirements of the plurality of reticles includes:

an attribute identifying the maximum time between inspections of a bare reticle; and

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an attribute identifying the maximum time between cleanings of a bare reticle.

33. (currently amended) An apparatus including at least one processor and at least one memory, the processor being operative to execute at least one program out of the memory for managing data corresponding to a plurality of reticles in a semiconductor manufacturing system, comprising:

a central reticle database configured and arranged to store data associated with the plurality of reticles; and

a reticle management controller communicably coupled to the central reticle database, the reticle management controller configured and arranged to store data in the central reticle database, and to retrieve data from the central reticle database,

wherein the data associated with the plurality of reticles includes first and second data, each of the first and second data including a plurality of data portions, each portion of the first data being associated with a respective reticle, and each portion of the second data corresponding to at least one predetermined data constant associated with the plurality of reticles,

further including:

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a central system database configured and arranged to store portions of the second data corresponding to system requirements of the plurality of reticles,

wherein the reticle management controller is communicably coupled to the central system database, the reticle management controller being configured and arranged to store and to retrieve the system data from the central system database, and

The apparatus of claim 30 wherein the portions of the second data corresponding to the system requirements of the plurality of reticles includes:

an attribute identifying the maximum time between inspections of a kitted reticle; and

an attribute identifying the maximum time between cleanings of a kitted reticle.

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